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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,106	01/31/2001	Tomokazu Kakumoto	15162/03080	5452

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EXAMINER

YE, LIN

ART UNIT PAPER NUMBER

2615

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/773,106

Applicant(s)

KAKUMOTO ET AL.

Examiner

Lin Ye

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 3-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 10-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/23/05 has been entered.
2. Applicant's arguments filed 9/23/05 have been fully considered but they are not persuasive as to claims 1-2.

For claims 1-2, the applicant argues that Kuroda and Collins references fail to teach all elements of the subject claim. In particular, amended claim 1 recites a specific structure including pixels and a level adjuster that is not taught or suggested by the cited references (See Applicant's REMARKS page8, lines 2-5).

The examiner disagrees. The examiner understands that the applicant specification and Figure 8 disclose a transistor having a first electrode, a second electrode, and a control electrode, the transistor (T1) having **the second electrode thereof connected to a first electrode of the photosensitive element** so that electric charge output from the photosensitive element flows into the transistor, the transistor receiving at the first and control electrodes thereof direct-current voltages individually so that the transistor operates in a subthreshold region, wherein the level adjuster adjusts the level of the electric signal

output from the pixels by adjusting the direct-current voltage **applied to the control electrode** of the transistor. However, the claim 1 **does not define** which one of the transistors in Figure 8 that output an analog signal that is natural-logarithmically proportional to the amount of incident light (e.g., all transistors T1, T2 and T3 output an analog signal that is natural-logarithmically proportional to the amount of incident light, see applicant's specification page 11, lines 11-18); which one of the transistor electrodes connect to the photosensitive element; and the bias voltage fed to which one of the transistor electrodes.

Therefore, the Kuroda reference is still readable on the most limitations recited in claim 1, e.g., the Kuroda reference discloses in Figures 1 and 4, a transistor (D-Tr 25) that output an analog signal that corresponding to the amount of incident light; and a level adjuster (e.g., the operational amplifier 71 in Figure 4 and reset transistor 73 together are considered as a level adjuster) that adjusts a level of the analog signal output from the pixels (e.g., the photosensitive element 24 being responsive to incident light and capable of a transition from a first electrical potential state as initial state to a second electrical potential state according to the amount of the received light , see Col. 7, lines 10-15; the level adjuster 71 adjusts a initial state of the photosensitive element 24, therefore, the output electric signal of pixel corresponding to a second electrical potential state at output node 41 also will be adjusted based on the initial state adjustment, see Col. 8, lines 37-65) by adjusting according to the analog signal output from the pixels (e.g., the voltage output from the output node 31 as the analog signal output from the pixels), a bias voltage fed to the transistor (e.g., the output voltage of the operational amplifier 71 as a bias voltage fed to the control electrode 26 of the transistor D-Tr 25, see Col. 8, lines 31-34).

It also should be noted that the examiner combining the teaching of Collins reference with the Kuroda reference is for evidence that one of ordinary skill in the art at the time of the invention to see more advantages when the imaging-sensing device is a logarithmic type imaging sensor so that has very wide dynamic range with makes the imaging-sensing device suitable for imaging external scenes (See Col. 6, lines 15-22). For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the imaging-sensing device of Kuroda by providing a logarithmic type imaging sensor for generating the output imaging electric signal as an analog signal that is natural-logarithmically proportional to the amount of incident light as taught by Collins.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al. U.S. 6,469,740 in view of Collins et al. U.S. 6,507,519.

Referring to claim 1, the Kuroda reference discloses in Figures 4-5, an image-sensing device (See Col. 7, lines 1-5) comprising: a plurality of pixels (picture elements 23) each comprising a photosensitive element (photoelectric conversion region 24) that generate an electric signal proportional to an amount of incident light and a transistor (D-Tr 25) that

output an analog signal that corresponding to the amount of incident light; and a level adjuster (e.g., the operational amplifier 71 in Figure 4 and reset transistor 73 together are considered as a level adjuster) that adjusts a level of the analog signal output from the pixels (e.g., the photosensitive element 24 being responsive to incident light and capable of a transition from a first electrical potential state as initial state to a second electrical potential state according to the amount of the received light, see Col. 7, lines 10-15; the level adjuster 71 adjusts a initial state of the photosensitive element 24, therefore, the output electric signal of pixel corresponding to a second electrical potential state at output node 41 also will be adjusted based on the initial state adjustment, see Col. 8, lines 37-65) by adjusting according to the analog signal output from the pixels (e.g., the voltage output from the output node 31 as the analog signal output from the pixels), a bias voltage fed to the transistor (e.g., the output voltage of the operational amplifier 71 as a bias voltage fed to the control electrode 26 of the transistor D-Tr 25, see Col. 8, lines 31-34). However, the Kuroda reference does not explicitly state the transistor that outputs an analog signal that is natural-logarithmically proportional to the amount of incident light.

The Collins reference teaches in Figures 2-3, an image-sensing device (See Col. 5, lines 41) comprising: a plurality of pixels (each pixels show in Figure 3) that generate an electric signal proportional to an amount of incident light and then output the electric signal (V_x) as an analog signal that is natural-logarithmically proportional to the amount of incident light (See Col. 5, lines 65-66). The Collins reference is evidenced that one of ordinary skill in the art at the time of the invention to see more advantages when the imaging-sensing device is a logarithmic type imaging sensor so that has very wide dynamic range with makes the

imaging-sensing device suitable for imaging external scenes (See Col. 6, lines 15-22). For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the imaging-sensing device of Kuroda by providing a logarithmic type imaging sensor for generating the output imaging electric signal as an analog signal that is natural-logarithmically proportional to the amount of incident light as taught by Collins.

Referring to claim 2, the Kuroda reference discloses wherein the pixels are arranged in a matrix so as to form an area sensor as a whole as shown in Figure 4.

Allowable Subject Matter

5. Claims 10-16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Please see the reason for allowance from the last examiner's Office Action mailed on 1/13/05.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Ye whose telephone number is (571) 272-7372. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Lye', with a long horizontal flourish extending to the right.

Lin Ye
Examiner
Art Unit 2615

November 16, 2005